

REMARKS

Reconsideration of this application is requested in view of the amendments to the claims and the remarks presented herein.

The claims in the application are claims 29, 30, 32, 38, 39 and 42 to 44, all other claims having been cancelled.

Claim 29 has been amended to recite a carbohydrate content of 37% (w/w) to 90% (w/w) which is supported by page 8 highlighted as submitted herewith. Also submitted is a table wherein the molecular weight ratio of carbohydrate content contained in the claimed carbohydrate peptide conjugates is compared with the molecular weight ratio of carbohydrate content which is found in conventional glycoconjugates, such as KLH-Tn3 that is disclosed by Kuduk et al. in 1998 (a copy of the article of Kuduk et al. is herewith enclosed for the Examiner's convenience).

As you will see, the carbohydrate content of the claimed carbohydrate peptide conjugates is far higher than the carbohydrate content which is found in the prior art conventional carbohydrate peptide conjugates. The molecular weight carbohydrate content of the peptide carbohydrate conjugates disclosed in Kuduk et al. that are compared have been calculated as detailed hereunder:

- (i) Molecular weight (MW) of one carbohydrate cluster: 1083

(ii) Molecular weight (MW) of the total carbohydrate content:
343 311 (317 x 1083), taking into account the 317 carbohydrate
clusters per protein.

(iii) Molecular weight of KLH: 5 000 000, which gives:
MW (carbohydrate) MW (conjugate protein-carbohydrate)=
$$343\,311 / 5\,343\,311 = \underline{6\%}$$

All the claims were rejected under 35 USC 112, first paragraph, as containing subject matter not supported by an enabling disclosure because of the scope of the claims to treat any tumor. The Examiner suggested that treating a specific tumor would possibly obviate the rejection.

Applicants respectfully traverse these grounds of rejection for the reasons set forth on pages 9 to 13 of the amendment of November 16, 2004 which are incorporated herein by reference. Moreover, the claims have now been limited to cancer as described in Example 4 of the application and it is believed that the claims are directed to specific tumor antigens. Therefore, withdrawal of this ground of rejection is requested.

All the claims were rejected under 35 U.S.C. 103 as being obvious over the Chong et al. reference taken alone or in view of the Jondal patent for reasons of record. The Examiner states that Chong discloses from line 65 of Claim 3 to line 67 of column 6 synthetic conjugates in B-cell epitope is a peptide compound and when PRP carbohydrate

is used in the dendrimeric structures, the Examiner lines 15 to 20 of column 3 as reciting immunogenic synthetic conjugate comprising synthetic PRP oligmers and the antigenic determinants of Hi outer membrane protein and concludes that whether PRP is called a carrier is immaterial. The Examiner believes the combination with Jondal because the important aspect of the conjugation of protein-polysaccharides conjugates is the desire to elicit both T and B cell responses.

Applicants respectfully traverse this ground of rejection since it is deemed that new claim 29 is not rendered obvious by the Chong et al reference taken alone or in view of the Jondal patent. Claim 29 is now directed to a carbohydrate peptide conjugate having a high carbohydrate content which induces an antibody response against a carbohydrate tumor antigen and the said conjugate is not obvious in view of the combination of Chong et al taken alone or with Jondal.

The Chong et al patent discloses dendrimeric conjugates which combine only peptide T and B-epitopes and Chong et al does not disclose or suggest any synthetic conjugate wherein the B-epitope is included in a carbohydrate moiety. Beginning at line 65 of column 3 through line 67 of column 6, Chong et al exclusively discloses synthetic conjugates wherein B-cell epitope is only a peptide compound and particularly, one of the P1, P2 and P6 proteins from hemophilus influenza (Hiv). It is clear from various portions of Chong et al particularly, line 62 of column 4 wherein B-cell epitope of the P1 protein is cited in line 8 of column 5 wherein the B-cell epitope of P2 is cited and in line 19 of column 5 wherein B-cell epitope of P6 is cited.

The PRP carbohydrate moiety is only used as a carrier molecule as stated in lines 50 to 51 of column 6 of Chong and Chong does describe or teach one skilled in the art that some antibody response would be induced. Moreover, there is no teaching of an antibody response against carbohydrate colon tumor antigens.


It may be underlined that Jondal et al. do not disclose nor suggest to the one skilled in the art any technical advantage that would be obtained by increasing the carbohydrate content of the conjugate that they disclose. Consequently, the one skilled in the art would have found no motivation to apply the teachings of Jondal et al. to the completely distinct structure of Chong et al. In all cases, even if the one skilled in the art would have sought to increase the carbohydrate content in carbohydrate peptide conjugate, he would have found no indication to do so in the light of the exclusively peptide structures that are disclosed by Chong et al.

The Jondal patent would not be combined by one skilled in the art with Chong without the benefit of Applicants' teaching since Jondal is only interested in raising a cytotoxic T-cell response against a carbohydrate moiety and specifically a peptide-carbohydrate conjugates that raises a CTL response. One skilled in the art could not have been taught that an effective antibody response could be expected against carbohydrate moieties. Therefore, withdrawal of these grounds of rejection is requested.

With respect of the obviousness type double patenting rejection based on U.S. patent No. 6,676,946 , Applicants are submitting herewith a terminal disclaimer with respect to the patent which obviates this ground of rejection.

In view of the amendments to the claims and the above remarks, it is believed that the claims clearly point out Applicants' patentable contribution. Therefore, favorable reconsideration is requested.

Respectfully submitted,
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Enclosures



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